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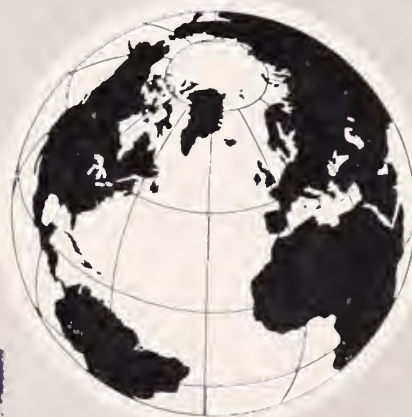


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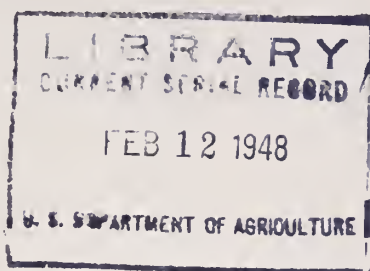
# Foreign Agriculture

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# Foreign Agriculture

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## FRONT COVER

### Harvesting Wheat in Alberta, Canada

During the war western Canadian farmers solved the problem of manpower shortage by use of modern machinery, by sharing equipment, and by helping each other in a variety of ways. On most prairie farms, the old-fashioned method of threshing has been supplanted by the combine harvester which reaps and threshes simultaneously. Many farmers, however, still use the old threshing methods to harvest their crops. (Photo by National Film Board—Courtesy of the Canadian Embassy, Washington, D. C.)

## BACK COVER

### World Map—Distribution of Wheat Production

The world average annual production of wheat during 1935-39 was 5,998 million bushels, whereas in 1947 the world crop amounted to 5,775 million bushels.

## NEWS NOTES

### Commodity Specialists Tackle Problems in Foreign Farm Markets

Studies at first hand of opportunities to enlarge, or to open new, foreign outlets for United States exports of agricultural products will be carried on under the Research and Marketing Act of 1946, first in Europe and later in the Far East. Assigned to carry on this project, under the direction of the Office of Foreign Agricultural Relations, are *P. K. Norris* for cotton, *Clifford B. Cheatham, Jr.*, for tobacco, *Frederick A. Motz* for fruits, and *Walter B. Schreiber* for tree nuts.

Mr. Motz, who has been an adviser to the United States military government in Austria, is now visiting the principal prewar European markets for United States fruits. Mr. Norris is engaged in a 3-month preliminary survey of the markets in the United Kingdom and several continental countries. Mr. Cheatham left for Europe in December to confer with representatives of governmental and private agencies concerned with tobacco to obtain information on the industry and to advise on leaf-tobacco manufacturing problems. *J. B. Gibbs* will accompany him to endeavor to establish improved reporting facilities on tobacco markets. Mr. Schreiber will visit the Mediterranean region this spring to obtain seasonable reports on production and market conditions for tree nuts.

The illustration on page 35 is a Black Star photo reproduced by courtesy of the Netherlands Embassy, Washington, D. C.

## FOREIGN AGRICULTURE

HALLY H. CONRAD, EDITOR

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# WHEAT—A WORLD SYMBOL

*Wheat has become a symbol in the world today. Not only does it represent food for hundreds of millions of people, but it is also symbolic of economic conditions, political stability, and, particularly, of democracy.*

by GORDON P. BOALS



Wheat is a symbol of food throughout the world, because the greater part of the world population depends upon bread, or cereals, as the basic dietary staple. Economic conditions are affected by wheat, because countries are rapidly depleting their foreign-exchange reserves to import this grain. Furthermore, governments faced with increasing food problems, especially cuts in bread rations, are finding it more and more difficult to maintain order and popular support. Thus, wheat plays a significant part in the political situation.

This fact raises two vital questions: (1) What is the situation for wheat and other cereals at the present time, and (2) what is the outlook for the period ahead, especially the next year or two? To paraphrase an old saying—as wheat goes, so may go the fate of many nations! With the facts at hand regarding supplies and requirements for wheat and other cereals, along with a consideration of other basic factors in the situation, not only are questions relating to wheat clarified but many broader economic and political problems as well.

## Current Season

The 1947-48 cereal year promises to leave its mark in history. For many nations and scores of millions of persons it represents a low point in bread and grain supplies, with food intake in some cases even below that of the war years, and is probably the worst year of modern times. In no year for which records are available has there been a greater wheat, or total-grain, deficit. As a result, populations, livestock, national economies and finances, and the political stability of nations have been under severe strain, with the full consequences not yet known.

Requirements of cereal grain, submitted to or estimated by the International Emergency Food Council, for importing countries totaled approxi-

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mately 52,000,000 metric tons for the fiscal year July-June 1947-48. This quantity, comprising nearly 40,000,000 tons of bread grains (wheat and rye) and 12,000,000 of coarse grains (largely corn, barley, oats, sorghums, and their products) for food and feed, represents a record figure and greatly exceeds any previous movement of grain in international trade. Perhaps one may more fully appreciate the magnitude of this import requirement of cereal grains by noting that it is approximately five times the total of all other foodstuffs moving in export trade and that it represents more than 6,000 full cargoes, requiring the loading of more than 500 ships per month and costing some \$6,000,000,000.

TABLE 1.—*Stated 1947-48 grain requirements and import programs approved, compared with actual 1946-47 shipments, by continent or area*

| Continent or area                  | 1946-47 shipments <sup>2</sup> | 1947-48 <sup>2</sup>  |                               |
|------------------------------------|--------------------------------|-----------------------|-------------------------------|
|                                    |                                | Original requirements | Approved program <sup>3</sup> |
| Europe:                            |                                |                       |                               |
| Program countries.....             | 13.6                           | 23.6                  | 14.6                          |
| Occupied areas.....                | 3.4                            | 6.2                   | 4.5                           |
| Others.....                        | 1.5                            | 3.3                   | 1.6                           |
| Asia and Pacific:                  |                                |                       |                               |
| Occupied areas.....                | 1.6                            | 3.1                   | 1.9                           |
| Others.....                        | 4.2                            | 8.5                   | 4.7                           |
| Africa.....                        | 1.0                            | 2.6                   | 1.1                           |
| North America and Caribbean.....   | 1.1                            | 1.2                   | 1.1                           |
| South America.....                 | 2.1                            | 3.1                   | 1.8                           |
| Total.....                         | 28.5                           | 51.6                  | 31.3                          |
| Estimated program adjustments..... |                                |                       | .7                            |

<sup>1</sup> Metric and long tons, which are about equal to 1.1 short tons—all figures rounded to nearest hundred thousand tons.

<sup>2</sup> Continental totals partly estimated.

<sup>3</sup> Indicated totals represent sum of quantities currently approved by Cereals Executive Committee for individual countries or areas—include estimates for some importing countries.

Even had supplies in this amount been available, importing countries would not have had a normal food position—the caloric intake would still have been much smaller than in the prewar years in most countries, and the use of grain for livestock feed would also have been reduced. The requested imports included some supplies for an increase in working-stock levels but not so much as the normal prewar quantities. Only a few countries planned any increase in bread rations for 1947-48. (See table 1.)

Table 2.—Estimated grain supply available for 1947-48, compared with actual exports during 1946-47, by countries  
(Million long tons)

| Country            | 1946-47 shipments |               |       | 1947-48 export supplies |               |       |
|--------------------|-------------------|---------------|-------|-------------------------|---------------|-------|
|                    | Wheat and rye     | Coarse grains | Total | Wheat and rye           | Coarse grains | Total |
| Argentina.....     | 1.7               | 2.5           | 4.2   | 2.5                     | 4.0           | 6.5   |
| Australia.....     | 1.3               | .1            | 1.4   | 2.4                     | .4            | 2.8   |
| Canada.....        | 6.2               | .6            | 6.8   | 5.7                     | -----         | 5.7   |
| United States..... | 10.8              | 4.1           | 14.9  | 12.1                    | 1.9           | 14.0  |
| Others.....        | .7                | .5            | 1.2   | 1.7                     | 1.3           | 3.0   |
| World total.....   | 20.7              | 7.8           | 28.5  | 24.4                    | 7.6           | 32.0  |

Export supplies available to meet the requested imports in 1947-48 total about 32,000,000 long tons, of which wheat and flour represent approximately 75 percent (table 2). The balance is largely made up of coarse grains, such as corn, barley, oats, sorghums, and their products. In other words, only a little over half the wheat desired by importing countries this season is available in exporting countries. Limitation of foreign exchange, especially dollars, is reducing the effective demand; and, were all the requested supplies available for export, the total quantity would probably not be purchased or shipped.

For a clear picture of world cereal requirements and supplies in 1947-48, one must examine conditions in each country and area—totals do not indicate the problem. Countries and areas showing the greatest change from a year ago and from average or normal conditions are France, Italy and the entire Mediterranean area, the Middle East (which experienced a severe drought in 1947), central and western Europe, and India. Many other countries suffered a severe reduction in food grains and especially in such feed crops as hay, pasture, and fodder roots; also, in potatoes. This reduction has limited collection possibilities and substitution of alternative foods for wheat.

The United States, the Soviet Union, and Australia, on the other hand, showed substantial increases in wheat production, with record wheat crops being harvested in both the United States and Australia. Only part of the increased production, which was approximately equal to the decline in harvests in importing countries, is, however, available for export to those countries. This fact results from a combination of circumstances, including smaller feed-grain crops in the United States, internal-transport and port-loading problems in Australia, as well as government-policy considerations regarding stocks and other factors. Exports from the Soviet Union are particularly affected by government policy, and, on the basis of present estimates of production, sub-

stantially larger grain exports could apparently be made from that area.

The critical supply position for 1947-48 has not come as a surprise. It was foretold in reports and work of the Cereals Committee of the IEFEC as early as the spring of 1947, and the Fourth Council meeting of the IEFEC, held in May 1947, adopted a resolution calling for a Special Cereals Conference to take place in Europe in July. This meeting, in Paris, July 9-13, 1947, was attended by the representatives of 40 nations, and an unusually large number of delegations were headed by the Minister of Food and/or Agriculture and other responsible government officials. At that time the prospective supply-and-requirement position for 1947-48 was outlined and discussed, and recommendations for action regarding management of indigenous supplies were agreed upon by the governments represented.

It has been obvious that the officially stated requirements could not be met, and, in fact, they represented varying degrees of urgency; also, that shipments of wheat and other grains would determine the total import quantity available for use for food or feed. The Executive Committee of the Committee on Cereals and its Secretariat were assigned the job of trying to equate supplies and requirements in such a manner that each country's claim upon world supplies would have a fair relationship one with another and might be justified before the Committee. This has been one of the greatest tests of international collaboration. The Committee on Cereals has 28 member countries, and, including the areas for which members are responsible, it represents nearly 95 percent of the world's grain-import requirements in 1947-48 and around 70 percent of the estimated world supply available for export.

A distribution program equating supplies and requirements for 1947-48 has been developed and adopted as a working basis by the Committee (table 1). This does not mean that the problem of the cereal deficit for the year has been solved; it does mean, however, that a form of strait-jacket program and diet has been designed for each country which, if it can be endured until the next harvest, will prevent any large-scale famine and which, it is hoped, will still maintain the basic national stability of countries. There are still some big question marks, or "ifs," in the situation, particularly owing to the lack of any significant flexibility left in the world position of supplies and requirements, with a depletion of stocks in practically all countries, the high extraction rates prevailing, and the reduced ration levels now in effect.

Coarse grains, particularly corn and barley, must also be used extensively as substitutes for wheat, according to the present program, if the deficit is to be met. With approximately 70 percent of the available coarse grains outside IEFEC-member sources of supply, notably in Argentina and the Soviet Union, somewhat larger quantities of such grain seem likely to be used for feed than is presently scheduled, and, to the extent that such use occurs, the food-deficit position will be intensified. During the coming weeks and months increasing attention will need to be given to a constant review of the position in individual claimant countries and to emergency situations that may be expected to arise. In particular, the April-June and July-September periods promise to be critical for many countries.

The experience with wheat and other grain deficits since the end of the war in 1945 and especially the problems in evidence this season point to several basic facts and conclusions. Among them may be noted:

1. The traditional wheat-exporting countries, particularly Argentina, Australia, Canada, the United States, and the Soviet Union and Balkan area, cannot be expected to meet the full needs of importing countries for wheat. To put it another way, importing countries must produce a substantial part of their own bread-grain needs every season if they are to continue their dependence upon bread as the basic item of food and improve the present inadequate food position. This conclusion is in no way a criticism of exporting countries—they have done a magnificent job, especially the United States, in expanding exports in each of the past three seasons when they have virtually doubled the volume of grain moving into world trade for food purposes.

At first glance, this conclusion also appears inconsistent with the thinking growing out of problems associated with surpluses during the decade of the 1930's and with the economic principle of "comparative advantage"; yet when analyzed it is consistent and logical—the problem is one of degree. One seldom realizes that wheat-importing countries account for nearly half the world production of wheat in most years. A 10-percent drop in the domestic harvests of such countries creates a deficit that exporting countries can scarcely be expected to meet in the same season. Yet they have been called upon to do much more than this in each of the past 3 years. The 1947 estimated production of wheat and rye in Europe alone shows a decline of approximately 30 percent from the 1935-39 average.

2. A second conclusion that has emerged is the importance of the population factor now as compared with prewar years. The estimated world population has increased by around 200,000,000 persons, or about 10 percent, as compared with the late 1930's, whereas grain and rice production combined (the staple foods of the world) in 1947 was down by about 5 percent. The combination of these two factors is greatly intensifying the seriousness of the world food position. In India alone, there are reported to be some 40,000,000 more persons today than in 1939—in effect a new nation almost equivalent in population to France or Italy has arisen there. Under present world food conditions, one is sometimes reminded of the fears of Malthus; it is quite apparent that, for limited periods at least, maladjustments in world production can create some very serious food problems.

3. A third conclusion that stands out relates to the international approach to the problem. Much is being said about the difficulties of sitting down around the conference table and working out international problems, and admittedly such difficulties are very real. These words are written out of an experience of many years in the international field as it relates to grain and food matters. Yet it has been this common approach, with a marked degree of cooperation, that has probably prevented some nations, or areas, from experiencing during the past 2 years one of the greatest famines in the world's history. Without the careful programming of supplies, some countries would have received more than they did, whereas others would have had much less; and the latter would have been in real trouble. If and for how long such joint efforts will remain effective is still a question, but achievements to date are a matter of record.



A common sight in Europe is a group of gleaners carefully gathering any grain that the harvesters may have overlooked.

## Outlook—Next Year and Beyond

Looking beyond the current season, which is still clouded by many uncertainties, is not an easy task. Any forecast must be based on certain assumptions, especially regarding the weather. With more normal weather, the position in 1948-49 should be less difficult than in the current season, and still further progress may be made in the years that follow in achieving a closer balance between supplies and requirements. On the other hand, as pointed out at the Fifth Council meeting in October 1947, "there seems to be little prospect that the world can work its way completely out of its food difficulties" as soon as one might hope for. This conclusion is based upon a number of general factors affecting production and requirements which, though somewhat modified in individual years, promise to exert a strong influence in the period immediately ahead. They were summarized in the following statement on the cereals position made in the Council meeting, October 26, 1947.

1. Prior to the war, cereal yields were relatively high in a number of European countries. These yields were the result of the extensive use of fertilizers, quality seed, and of intensive cultivation. With fertilizers, seed, and labor still inadequate, it seems unlikely that a return to average prewar yields can be expected in many of these countries for several years. Furthermore, the same factors are retarding an immediate return to prewar acreages.



A group of boys in a European city made happy by the gift of a piece of bread.

In other areas, particularly eastern Europe, the division of large commercial farms into small operating units has not only affected grain yields adversely but has resulted in a change in the agricultural pattern that seems likely to reduce, for some years at least, grain production and especially grain marketings.

Furthermore, adjustments in the boundaries of a number of countries, both in Europe and in the Far East, have followed the cessation of active hostilities. In many cases these adjustments have been accompanied by large transfers of populations together with major changes in the former economic basis of agricultural production and marketing. Indeed, these population shifts have had the immediate result of leaving considerable areas of good agricultural land wholly, or partially, uncultivated. Obviously, some time will be required to reestablish the former levels of production, not only in the uncultivated areas but in areas resettled by people who are strangers to the land on which they have located, and most of whom have inadequate machinery and draft power.

2. An important factor contributing to the current cereals shortage is the reduced production of rice in the Far East, particularly in the countries that normally export rice. This decline has added several million tons to the requirements for other cereals in order to maintain the total cereal rations of the population of these far eastern countries. In general, these countries represent some of the most heavily populated areas of the world, and until surplus rice becomes available again in volume the import demand for other cereals to make up for the rice deficit will continue to be far larger than in prewar years. The Rice Conference at Trivandrum, India, in May 1947, concluded that continuing, though gradually lessening, deficits of rice would exist at least through 1951.

3. Ever since the end of World War II cereal-import requirements for livestock feeding have had to take second place to the requirements for maintaining the bread ration. Prior to the war nearly half the international trade in grains was in coarse grains, most of which were used for livestock feeding. All European countries, as well as individual countries elsewhere, will make every effort to obtain more grain and other feeds for livestock rehabilitation as soon as the supply position permits. There is every reason to believe that postwar movement of grain for feeding purposes, at least as large as that before the war, will reemerge as soon as the supply position permits.

4. During the past 3 years grain production in general and wheat production in particular have been

at record levels in the United States. Some decline from these levels seems most likely. Grain production in Canada in the future may be expected to be somewhat, but not necessarily greatly, larger than that of the past 3 years. Southern Hemisphere grain crops have been somewhat under prewar levels since the end of the war, and some recovery may be counted upon. Such recovery, however, is not likely to constitute a major contribution to the solution of existing world shortages.

In this connection, it is of interest to note that the State of Kansas alone has been producing more wheat than either Australia or Argentina during recent years; also, that the importing countries of France and Italy usually outrank the Southern Hemisphere areas as wheat producers.

5. The world demand for cereals is being influenced by the expanding population and the increased effective demand for food, also for bread. In some countries this increase is associated with improvement in consumer incomes and movement of people to urban areas; in others the shortage of other foodstuffs, mostly higher priced, has added to the demand for cereals, especially wheat. Finally, the increasing concern of governments and the responsibility they are assuming for the maintenance of some minimum dietary levels should, in the future, reflect a firmer demand for food, particularly the cereals, than when hundreds of millions of people throughout the world were left to live or die without government "interference." The most uncertain factor in all these speculations is the availability of the foreign exchange necessary to translate requirements into effective demand. Again, it seems reasonable to conclude that some resolution of this potential difficulty will be found; otherwise, "surpluses" of cereals could accumulate in some countries, as in the early 1930's, while chronic malnutrition prevails in others.

### *An International Wheat Agreement*

In looking ahead, however, for a period of several years, probably most people, especially those who have been close to the problem of the world cereal deficit in the past several years, view with concern the outlook for world trade in wheat and other cereals when supplies and requirements are more closely in balance. This concern arises from the forces—social, economic, and political—that are being created by the present food deficit, the relatively high prices for wheat in exporting countries, and the policies being followed by some exporters.



Shortages of food have resulted in black-market operations in cereal products in many European cities.

Many countries are now paying out of their rapidly diminishing foreign-exchange reserves considerably higher prices for imported wheat than they pay their own producers. Under such conditions, what argument can exporting countries have against a move for self-sufficiency in importing countries and a repetition sooner or later of the problems of the 1930's.

The stage is now being set for a play in which the forces of state controls, autocratic powers, self-sufficiency, combined with channelizing of trade or the creation of economic and, in turn, political blocs, will appear to be the way to approach the solution of national food problems. Alternatively, the play could be quite different if exporters and importers get together, particularly with regard to prices, and make such concessions as may be necessary to develop national policies that, while encouraging some further wheat production in importing countries, will limit the adverse effects of uneconomic production. Some form of a wheat agreement among the principal exporting and importing countries that will provide for maximum and minimum prices to cover the next several years could supplement and extend the present international cooperation on seasonal allocations and make for a more orderly development of the transition period. As this is being written, discussions are under way, and the possibility of reaching such an agreement should soon be known.

So it is that wheat has become a world symbol. Agreement on wheat offers a concrete example of international collaboration for the future with regard to basic world commodity problems. Nonagreement points toward the possibility of an eventual world war in wheat, the consequences of which may have a far-reaching effect on the national and political economy of nations.

# Mace From Grenada's Nutmegs



by CHARLES H. WHITAKER<sup>1</sup>

A story is often told by old planters in Grenada, British West Indies, of an English absentee landlord who found that mace from his plantation was selling at 50 cents a pound, whereas nutmegs were bringing only 16 cents. He wrote to his overseer in Grenada: "Don't bother any more with the nutmegs on the plantation. Concentrate on growing mace in the future."

Since mace is the covering which envelops a part of the shell of the nutmeg, it could hardly be cultivated as a separate crop. In the United States it is commonly known as a fine powder which is used to season foods, particularly meat. On a nutmeg tree, when the fruit reaches the stage in which it resembles a large greenish-yellow plum, the shell of the nut already formed within the pulp is tightly clasped by a green, leafy covering from which at maturity the mace, as known to housewives and tradesmen, is derived.

As the nut ripens, the mace becomes pink; when the shell of the nut turns a dark, shiny walnut color, the mace assumes a striking red shade. It flashes on the tree after the yellow plumlike pod ripens and splits; and, when the nut falls to the ground, the vivid red of its covering contrasts sharply with the dark brown of the damp, fertile soil, or the gray-green moss, upon which the nut is apt to rest. If the nut happens to fall into a puddle of water during wet weather, however, the mace soon becomes dark brown, or black, in color and loses its pungent odor and spicy flavor.

## Collecting and Handling

Fortunately most nuts are usually picked up within a day or two after they fall from the tree. They are then taken to the boucan (storing and drying house), where each shiny, dark-brown nut is slipped out from among the branching strips of mace, which cover about one-half the surface of the shell, flow down from a small point at the top where they are attached, and gradually converge toward the bottom. A girl usually severs the point of attachment with her fingernail. Then she presses this lacelike

covering flat with her hands so that it will dry more readily, pack with less breakage, and therefore bring a better price in the market.

If the mace comes from nutmeg groves that are soaked with rain almost every day, it is stored for a short time in large round baskets. The same day, or a day later at most, it is thinly spread in large trays, which are placed in the sun, and left to dry. Many of the natives spread mace on burlap bags or large mats made from stems of wild banana plants. A familiar sight, to those driving through the countryside of Grenada, is a bright bit of red at every corner by the roadside—mace drying in the sun. At night, or when rain threatens, it is carefully put under cover. On most large estates, the trays of drying mace are rolled in under the boucan roof on tracks.

After the mace has been properly dried, it is stored in wooden bins, about 6 feet long, 6 wide, and 6 high. These bins are kept tightly covered at all times in order to ward off the attacks of the mace beetle, *Araccerus fasciculatus*. Mace can be stored for almost any length of time in this manner, but planters take the precaution of fumigating it each week by pouring a few teaspoons of carbon bisulphide into a saucer in the top of each bin.



A woman removes the mace from nutmegs by severing the point of attachment with her fingernail.

<sup>1</sup> See WHITAKER, CHARLES H. NUTMEGS FROM GRENADA. Agr. in the Americas 7: 50-53, illus. 1947.

When first dried, mace is brittle and dark red in color, a shade similar to that of dried beef. In 3 weeks it takes on a brownish-yellow color, resembling that of a dried fig, and in 6 weeks it usually assumes a pleasing bright-amber tint about the color of flint corn. This is the stage in which it is known in our spice marts.

### *Sorting, Grading, and Packing*

When a planter decides that his mace has reached the proper color, and if a ready market is available, he begins the sorting process by sifting it with a large mechanical sieve, which oscillates back and forth and removes dust and small impurities. A large group of women, experienced in cleaning and grading, then pick it over by hand.

Large clear-yellow pieces, each usually including all the mace covering that surrounds one nut, with no broken fragments, are graded highest and known as "pale whole mace." The darker colored pieces, smaller in size, make up the "No. 1 broken mace," as known to commerce. Smaller, dark-colored pieces are classified as "No. 2 broken mace." Chaff and very dark colored pieces, which have become stained through lying overlong in water in the fields, or which have some malformation, are put aside to make up an inferior grade called "mace pickings." This grade is not exported to the United States but is sold only to certain European and Latin American markets.

Great care is exercised by the larger exporters of Grenada to see that their product is clean, for samples of all imports are subjected on arrival at a United States port to a violet-ray examination, which shows up all impurities and foreign matter. Any shipments that are not clean are rejected by the inspectors and are either condemned as unfit for food and only usable for distillation or are accepted only if recleaned, which means high additional charges.

After being sorted, mace is packed by hand, according to grade, in light plywood cases, resembling tea chests, of 200 pounds net weight. The standard size is 24 inches long, 24 wide, and 22.5 high. These cases are made of light veneer, obtained from Sweden and Canada, with a 0.75-inch bright iron reinforcing strip tacked over each corner. Some exporters pack these cases with a portable hand jack. This is a slow method, since the cases break if pressure is applied too rapidly. It usually takes about an hour to pack one case of mace by this means.

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Charles H. Whitaker is American Vice Consul and Second Secretary, American Embassy, Montevideo, Uruguay.

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Sorting mace at a boucan in Grenada.

The more usual method is to put a small quantity of mace in a case and cover it with a burlap bag. Over this a worker places a piece of board just large enough to go into the case. On this a man stands and shifts his weight about until the mace is pressed flat. Then the board and bag are taken off, another layer of mace is put in, and the process is repeated until the case is completely filled. This method of packing is faster than the other and enables a packer to fill a case in from 20 to 30 minutes.

Normally, the yield per acre for mace in Grenada averages about 150 pounds of the green product or from 30 to 40 pounds of the cured. Ordinarily about 100 pounds of green nutmegs will yield about 8 pounds of fresh mace.

Mace prices ordinarily follow very closely the trend in nutmeg prices, and, in general, a pound of mace sells for a little more than twice the price of a pound of nutmegs. Grenada exports in normal times about 340 tons of mace each year. Up to 1942, four-fifths of the total exported usually went to the United States, and the bulk of the remainder to Canada.

Some of Grenada's mace is sold by the larger estates direct. The greater part of the production is, however, handled by three or four major exporting houses, which buy from both the peasant proprietors and the larger estates and sell by cable to the American brokers.

# European Programs For Expanding Farm Production<sup>1</sup>



On a world population map, thickly clustered dots draw the eye to Europe. Here dense populations must either live upon their own production at much lower nutritional levels than they would like; or, as industrialized western Europe did before the war, they must import much supplementary food. Several years of critically short food supply resulting from war and poor crop seasons focus attention especially, therefore, upon national efforts to improve the food supply of the various countries through long-term programs for achieving sustained increases in agricultural production.

Generalizations must be inexact for many countries or districts in a region so large and diverse as the European Continent. Nevertheless, the pattern of much of the Continent is that of a long-inhabited region of firmly established economic, social, and agricultural institutions, with industry well advanced and agriculture relatively well developed and, in the more industrialized countries, extended nearly to the limits of usable land by the pressure of population.

Imports before the war of food and feed to supplement indigenous production provided more than 15 percent of the total food supply for Europe, excluding the Soviet Union and Turkey. As much as about 70 percent of the United Kingdom's food supply was imported; a few countries were nearly self-sufficient, and others were net exporters.

Changes necessary to expand agricultural productivity may be difficult under the circumstances now existing in many of the European countries. The more important have, however, undertaken long-term programs or plans designed for this purpose and sponsored or financed by their governments.

These European governments, under present conditions, include in their plans measures for shifting the use of land into crops which yield relatively high outturn per acre of products usable directly as human food. This objective, however, is of a shorter term

nature. Greater interest centers upon the measures designed to increase the size and productivity of the agricultural plant itself, several of which are briefly summarized, by country.<sup>2</sup>

## *Czechoslovakia*

Although Czechoslovak agriculture suffered little war damage, the country lost 9 percent of its territory and 5 percent of its population by ceding Ruthenia to the Soviet Union. Nearly 2,500,000 Czechs and Slovaks are reported to have been resettled in the regions from which over 2,500,000 Germans (more than 17 percent of the prewar population of Czechoslovakia, excluding Ruthenia) were expelled.

Mechanization is being emphasized to offset the shortage of labor in agriculture. Both the present 2-year and the recently drafted 5-year plans aim at marked increases in farm machinery; at the end of the 5-year plan each village is expected to have three tractors. The plan also calls for the consolidation of excessively fragmented holdings, a prerequisite for the success of the mechanization program; the increased use of fertilizers; and generally improved production methods for both crops and livestock.

## *Eire*

Drainage of bogs, which cover one-sixth of Eire's land area, and complete rural electrification are planned as prime factors in mechanization and modernization of the country's agricultural plant. It is planned to generate current (in addition to hydroelectric sources) from turf or peat, mechanically cut at a planned rate of 1,000,000 long tons per year. Drainage, usually requiring at least 5 years per bog, is now under way, and cutting is expected to be full-scale by 1950. Drainage also makes available for tillage fertile, but now swampy, tracts bordering the bogs. Goals also include increasing the output per acre by restoring soil fertility and modernizing tillage methods. The British Government has just concluded arrangements with Eire to aid in rehabilitation of the Irish livestock industry. Britain will endeavor to

<sup>1</sup> This article is based on a report prepared in the Regional Investigations Branch of OFAR, with assistance from members of the International Commodities Branch. Principal authors are Lois Bacon, Theodora Mills, Montell Ogdon, and Lazar Volin. No attempt was made to evaluate the success of the various programs.

<sup>2</sup> European countries having colonial dependencies extend their programs for increasing food supplies to these areas, and in a later article in *FOREIGN AGRICULTURE* the extent of such efforts will be summarized.

furnish coal, machinery, fertilizers, and improved seeds and will pay increased prices for certain livestock products and seed potatoes.

### *Finland*

Efforts of the Finnish Government to increase food production are limited to the effects of the land reform of 1945. This was aimed primarily at colonization of refugees from territories ceded to the Soviet Union and secondarily at aiding war invalids, widows, and orphans. The program has required the opening of new areas to cultivation, as well as distribution of larger holdings. Difficulties of clearing and draining new land, for which tractors and other heavy machinery must be imported, have slowed progress. While cultivation of new land tends to increase production, fragmentation of the larger, often more efficient, land units tends to depress average crop yields.

### *France*

The 4-year plan for French agriculture aims at restoring production to levels exceeding the prewar average. Less land is to be cultivated and more devoted to pastures than before the war; but, should the planned increases in yields per acre materialize, output in 1950 of all important crops, except oats and wine, will be close to, or above, the prewar average. Plans for meat and milk call for a recovery in production to prewar levels by 1950.

Increases in yields are to be obtained through the modernization of agricultural equipment and techniques. Special emphasis is placed on mechanization and, an essential if mechanization is to yield the hoped-for returns, on the consolidation or regrouping of excessively fragmented farms. Tractor numbers, 33,000 in 1938, are to increase by 200,000 in the years 1947-50, and numbers of other agricultural machines by an amount corresponding to the tractor program. Consolidation of farms covering a minimum of 8,600,000 acres—an area equal to more than one-tenth of the land in agricultural use—is to take place within the same period. Further proposals are to double prewar fertilizer applications, withdraw poorer lands from crop (notably wheat) cultivation and to improve production practices. Other parts of the plan deal with drainage and irrigation, rural roads, electrification, and rural development generally.

Not only crop but also livestock yields are to be increased. The livestock plan stresses choice of adapted breeds, continued upbreeding by use of superior sires, improved feeding, and better sanitation and housing.

### *Western Germany (U. S. Zone)*

In the United States zone of western Germany, tentative estimates indicate that the land-reform law, approved in 1946 and now being implemented, will add to the cultivated area (in the zone) some 750,000 acres. Much effort has been directed toward restoring the productive capacity of the land already in agricultural use by increasing supplies of fertilizer, high-quality seed, machinery, and other farm requisites. Seed testing, research, breeding, and production have been emphasized.

### *Greece*

Projects concerned mainly with flood control, drainage, and irrigation, which were undertaken in Greece as early as 1920, and which were interrupted by the war, are now being resumed and expanded. In addition, Greece expects to increase its food production through various projects in which the American Mission is cooperating, such as more efficient methods, use of more fertilizer and machinery, and control of pests.

### *Italy*

Government programs in Italy for increased farm output have long emphasized irrigation and land-reclamation schemes designed to open new land to farming and increase the productive capacity of land



Restoration work on the dikes of the Netherlands.

already in agricultural use. During the next 5 years the plans are to carry out new irrigation projects for 915,000 acres and to complete already initiated projects for 437,000 acres. Within 10 years, 2,800,000 acres are to be reclaimed and transformed.

### *Hungary*

The Hungarian 3-year plan, announced in August 1947, aims to restore agricultural production close to the 1938 level. The area of irrigated land is to increase from 42,000 to 185,000 acres. Yields, which suffered severely because of the war and radical adjustments of the 1945 land reform, are to be restored through increased application of fertilizers and better farm practices. Thirty percent of the funds devoted to the 3-year plan are to be spent on agriculture, about half of this amount going for irrigation, housing (including schools), doctors, nurseries, rural electrification, and road building.

### *Netherlands*

Extension of the cultivable area has long been a major tenet of Netherlands agricultural policy. Two major land-reclamation projects undertaken in recent years are still in progress. One is transformation of thin, sandy, and barren soil, typical of large sections in the eastern Netherlands, into rich agricultural land by intermixing with the sand the underlying peat. The second is drainage of the Zuyder Zee, begun in the late 1920's. When this is completed, a total of over 525,000 acres will have been added to the Dutch soil, increasing the agricultural area by about 10 percent. Most of the new land is, or will be, used for crops.

Most of the large area flooded in the last months of the war has been returned to some form of cultivation, but several years of scientific treatment will be needed to restore to normal the 175,000 acres flooded with salt water. Fresh-water flooding of about 450,000 acres did little damage beyond the first year.

### *Norway*

Norway's plans for agriculture stress mechanization and intensification of production on land already in agricultural use. At the same time the Government is continuing to subsidize the clearing of new land. Before the war 18,500 to 21,000 acres of such land were being brought under cultivation annually. Slowed by the war, this work is only now beginning to return to normal. Some 11,000 acres of new land are expected to be cultivated in 1947 and 15,000 acres in 1948.

### *Poland*

Great war damage, shifts in boundaries, losses of territory, population movement and decimation, and land reform have handicapped the recovery of agriculture in Poland. Under the National Economic Plan for the years 1946-49, goals are established for the resettlement of the "recovered" or German territories; state-aided reconstruction or construction of new farm buildings; consolidation of fragmented holdings; increases in supplies of draft power, agricultural machinery, and fertilizer; restoration of the cultivated area; and rebuilding of livestock herds. Agricultural production per capita is to recover to 90 percent of the 1937-38 level in 1948 and reach 110 percent in 1949.

### *Soviet Union*

The first objective of the postwar Soviet agricultural program is recovery from ravages of war. The 5-year plan promulgated in 1936, however, aims at considerable expansion above the prewar level; by 1950, agricultural output is to increase above that of 1940, by 27 percent, which, if correctly estimated, appears to be too ambitious.

Expansion is to be accomplished only to a small extent by increasing crop acreage, but primarily through raising yields of crops and livestock production, which in the past proved to be a difficult undertaking. The 1950 area is to be approximately 14,000,000 acres, or about 4 percent higher than in 1938 for the present territory of the Soviet Union. A small part of this increase is to be accomplished through extension of irrigation, primarily in the "cotton belt" of Central Asia (Turkestan) and Transcaucasia, and through drainage of swampy land. The 1950 goal for newly irrigated land is 1,600,000 acres and for drained land, 1,500,000 acres.

Yields deteriorated through the war, and in an effort to raise them attention is paid in the plan to crop rotations in which grass as a soil-improving crop is an important element. Much importance is attached to planting tree shelterbelts to protect crops in the extensive semiarid steppes. Improvement of seed supply and of breeding stock and greater use of machinery are stressed.

### *Turkey*

The Turkish Government, in 1937, formed the Agricultural Combine Administration, which first functioned as an agency to import and distribute farm machinery. In 1940 the agency was given the new



Derelict land in the United Kingdom being cleared of bush in order to increase Britain's tilled acreage.

job of operating large-scale state farms, the object being to increase food production during the war by large-scale efficient farming of state lands. By 1947, 13 farms totaling over 200,000 acres were being so operated. The functions of these state farms have lately been extended to emphasize production of better seed and livestock, development of dairying, establishment of model orchards and farms, and the education of young farmers in modern methods.

### *United Kingdom*

The United Kingdom has enacted legislation for carrying out postwar plans to maintain output of agricultural products in Britain at a high level. Currently, the program calls for a net increase of 20 percent in domestic agricultural output between 1947 and 1951. Wheat, barley, milk, eggs, beef, and pork are the principal commodities to be emphasized.

The tillage acreage was increased more than 65 percent during the war. While some decline has occurred since, tilled acreage in 1947 amounted to nearly 12,900,000 acres, compared with 8,800,000 in 1939. High-yielding food crops, such as wheat and potatoes, were emphasized. The increase was attained largely by plowing up permanent pasture and clearing bush from derelict land. Estimates indicate that 38 percent of the permanent grassland of the United Kingdom was plowed up. These processes, together with drainage and clearance of several thousand acres of fenland resulted in an important expansion of the production plant. From this point estimates indicate that clearing and drainage become less economical.

The Agricultural Act of 1947 gives legislative effect to the wartime policy of increasing agricultural output by maintaining increased tillage acreage, by mechanization, scientific agricultural practices, guar-

anteed prices and assured markets, and classification of land according to the use for which it is suited. While general nationalization of land is not advanced as Government policy, the state does have power to step in and buy land in order to enforce its full productive use according to recognized standards of good husbandry.

### *Yugoslavia*

The Yugoslav 5-year plan calls for a 20-percent increase in agricultural output in 1951, compared with prewar years. This is to result from greater acreage and livestock numbers and from higher yields. The plan is to drain 1,000,000 acres, irrigate another million, and to reduce fallow land. Increase of cropland to 19,000,000 acres from 17,800,000 in 1939 is expected by 1951. The plans call for 16 percent more cattle, 71 percent more hogs, 46 percent more sheep, a 20-percent increase in corn yields, and 22 percent more milk per cow. Improved plant and livestock breeds and more pesticides are to be used. Commercial fertilizer use is to increase by 350,000 tons (reportedly 48 times the prewar use), and peasants are expected to modernize and mechanize their methods.

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## INTERNATIONAL *Agricultural News*

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### **Head of Agricultural Mission to Colombia Returns**

Dr. Edward C. Johnson, Dean of Agriculture at Washington State College, spent several days in Washington, D. C., the first of December on his return from Colombia after nearly a year's absence. He had been serving as head of a mission, invited by the Government of Colombia, to assist in carrying out organizational programs helpful to agricultural extension, research, and education.

Other members of the mission, who are still in Colombia completing phases of the mission's work, were Charles L. Blackman, Extension specialist in animal husbandry at Ohio State University; J. Dennett Guthrie, formerly an Extension specialist at Virginia Polytechnic Institute; J. Dewey Long, of Tacoma, Wash., President of the American Society of Agricultural Engineers; and Jeff E. Flanagan, irrigation specialist of Media, Pa.

The mission was sponsored by the U. S. Departments of State and Agriculture.



### Foreign Visitors See National 4-H Club Congress in Action

Latin American students in training for agricultural extension work were among guests from 15 foreign countries who attended the 26th annual National 4-H Club Congress at Chicago from November 30 to December 4, 1947. Pictured above, from left, are Eduardo Arze, Bolivia; Miss Alicia Salas, Ecuador; Miss Nair Perdomo, Uruguay; M. L. Wilson, Director of Extension Service, U. S. Department of Agriculture; Miss Lucia Arcos, Ecuador; José Perdini, Panama; and Miguel Bechara, Brazil. These young men and women are training in the various State Extension Services.

This year, for the first time, the National Committee for Boys and Girls Club Work, sponsor of many events that feature the Congress, especially invited representatives of other countries to this climax of the year's work for outstanding members from the country's 1,700,000 4-H Club membership. The foreign guests saw the presentation of contest awards, attended discussion conferences, and viewed the livestock show. They were also tendered a special dinner and other courtesies. Representatives of Canada, Denmark, France, Norway, Sweden, and the United Kingdom attended.

Members of farm-youth organizations in England and Canada, a number of Polish farm young people sponsored by a church group, others from China, Sweden, and the United Kingdom, as well as the Latin American trainees pictured above, were also present.

### ABACÁ

Abacá, *Musa textilis* (Nee), a bananalike perennial plant, often called Manila hemp, supplies a major part of the world's hard-fiber supply for cordage and other industrial needs. At least 95 percent of the world outturn was produced in the Philippines prior to World War II, and undoubtedly this fiber will continue to be an important agricultural commodity of the Islands. The Netherlands Indies supplied the remaining 5 percent.

The pressure for food production in the Philippines, virtual abandonment of the plantations during the war, and subsequent exploitation due to short supply and favorable prices, with little foresight toward sound agronomic rehabilitation, have resulted in tremendous destruction of plantation acreage.

The 1947 production of the Philippines was around 700,000 bales (194,600,000 pounds) as compared with an average of almost 1,500,000 bales per year for the 5-year period 1936-40. Since the 1947 production was secured at the expense of indiscriminate harvesting and consequent destruction of acreage, the 1948 production may not exceed 500,000 bales.

In the Central American countries of Guatemala, Honduras, Costa Rica, and Panama 26,000 acres are now under abacá, from which the 1947 output may have reached 125,000 bales of good-quality fiber. This acreage may return at least 200,000 bales in 1948.

The United States is normally the principal market for abacá fiber, accounting for 26 percent of the Philippine exports during 1935-40 and a correspondingly higher percentage in value, 33 percent, since the higher grades for cordage purposes are utilized in this country. The United Kingdom and Japan were the other principal markets for abacá fiber prior to the war, utilizing the medium and low grades.



# Gifts of Science

## BAMBOO CULMS FOR INDUSTRY



by F. A. McCLURE

A brief section, under the heading Bamboo Production and Industrialization, in the 1947 Annual Report of the Chief of the Office of Experiment

Stations brings into relief important benefits accruing from the work of two agencies of the United States Department of Agriculture. Bamboos introduced by the Division of Plant Exploration and Introduction, BPISAE, and studied intensively at the Federal Agricultural Station at Mayaguëz, P. R., are paying dividends.

Basic work at the Mayaguëz station, supported in part by the Puerto Rican Government, demonstrated the feasibility of a program for producing and utilizing certain introduced bamboos in the Island. Meanwhile a subsidiary of the Insular Government, the Puerto Rico Development Co., incorporated in its program a plan for developing industrial uses of bamboo in Puerto Rico. Puerto Rican farmers are now producing a new crop, bamboo culms, for which there is a commercial demand. These constitute the raw material of two thriving new industries in Puerto Rico—the manufacture of bamboo furniture and the manufacture of split-bamboo fishing rods. Seasoned bamboo culms aggregating over 20,000 linear feet were purchased by local manufacturers during the year.

The Insular Forest Service is collaborating with the Mayaguëz Station, utilizing bamboo plantings in its program of watershed protection and erosion control. To this project the station allocated during the year over 18,000 offsets of bamboos specially suited to these purposes.

The digging, preparation, and shipping of these units involve large outlays in the form of manpower and transportation costs. Experiments are under way at the Mayaguëz Station which have as their purpose the development of more rapid and more economical methods of multiplying bamboo plants for distribution. Thus far the most promising results achieved have been in the line of propagation by means of leafless-branch cuttings. With bamboos for which this method has proved successful, the yield of young

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F. A. McClure is Field Service Consultant on Bamboo, Office of Foreign Agricultural Relations.

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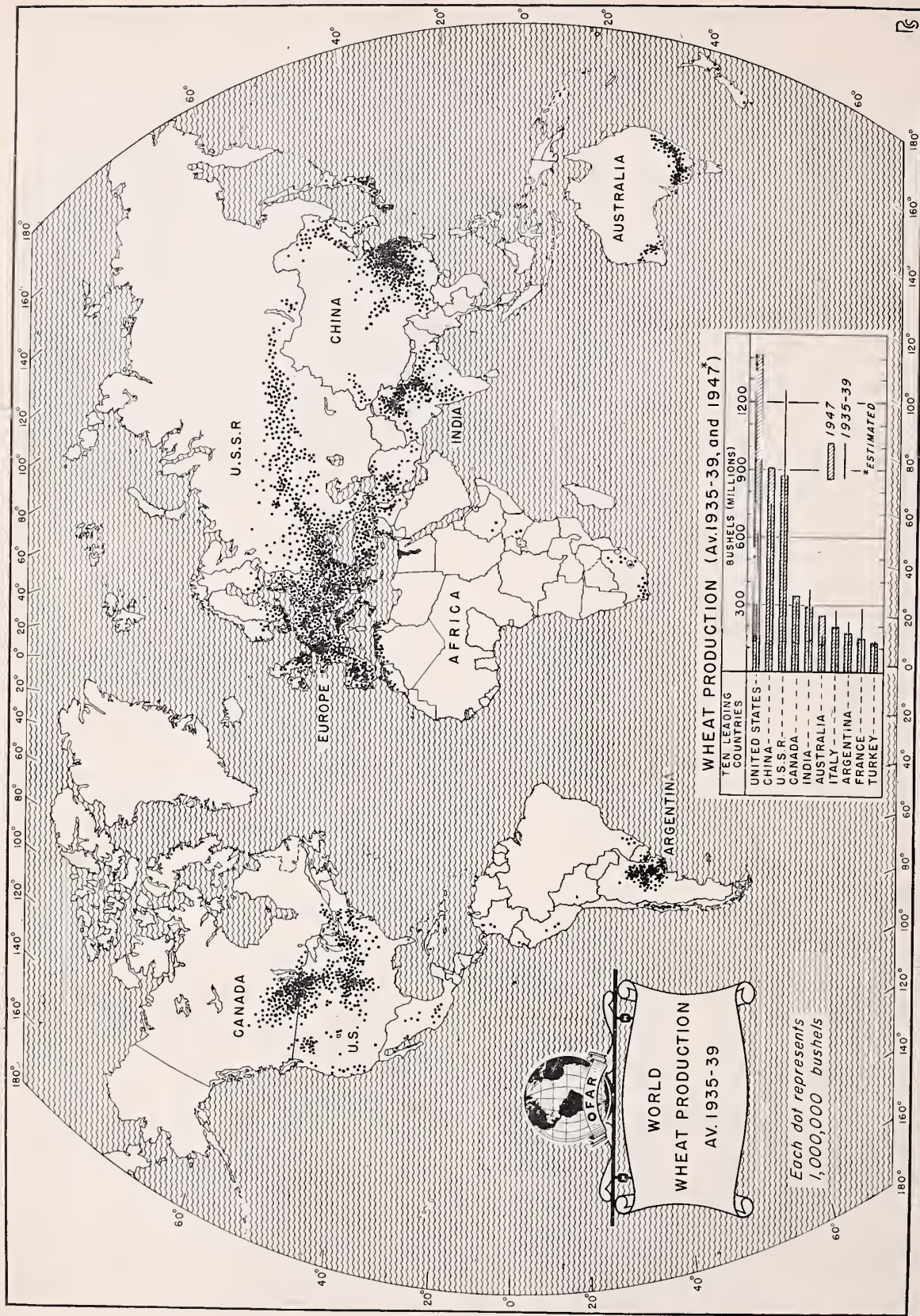
Bamboo furniture, eminently suited for piazza, patio, or terrace, designed and built at the Federal Agricultural Experiment Station, Mayaguëz, P. R.

plants has been greatly increased. The height of each plant so produced is but a fraction of that of one of the massive offsets used at present as the principal basis of distribution. The work of preparation is also materially reduced. Bamboos of different species vary in their susceptibility to propagation by this method, and more work remains to be done. Apparently little benefit has been realized thus far from the use of hormones to stimulate root initiation.

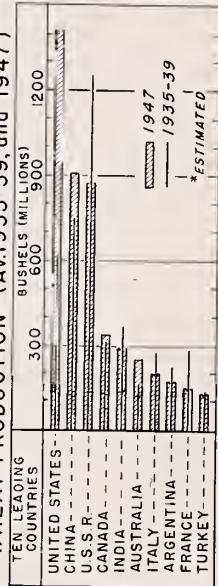
Another promising line of investigation is concerned with propagation from seed. One species of bamboo flowered at Mayaguëz and produced a large quantity of seed in 1945. Timely planning made possible the utilization of this rare harvest as the basis of studies on methods of storing bamboo seed and on the rate of growth of bamboo seedlings.

The storage methods were designed to preserve the viability of the seeds, which are ordinarily very short-lived. Of the various methods tried, storage over calcium chloride at room temperatures proved the most satisfactory.

The success achieved in these studies emphasizes the desirability of developing an artificial method of inducing bamboos to flower and produce seed. When this has been accomplished, it will provide a means of rapid and economical multiplication of the bamboos that have proved worthy of wide dissemination for practical exploitation. It will also facilitate the identification of bamboos.



WHEAT PRODUCTION (AV. 1935-39, and 1947)



This map shows the average annual world wheat production during the period 1935-39. Dots, each representing 1,000,000 bushels, are located approximately where the wheat was grown. On the chart insert, a hatched bar indicates the 1947 production of wheat, and a thin solid line represents the average 1935-39 crop. Note the increases in 1947 over the 1935-39 average for wheat production in the United States, China, and Australia. The other countries shown produced much less, or just about held their own, in 1947 as compared with the average period. The total 1947 world crop of wheat was approximately 223,000,000 bushels smaller than the average annual production during 1935-39.



